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THE PLIOCENE SKULL OF CALIFORNIA AND THE FLINT IMPLEMENTS OF TABLE MOUNTAIN

THE celebrated skull from Calaveras county, California, claimed to have been found at a depth of 130 feet in the auriferous gravel deposits of a Pliocene river "beneath the lava, in the cement, and in close proximity to a completely petrified oak" was exhibited by Professor J. D. Whitney at the Chicago meeting of the American Association for the Advancement of Science in the month of August 1868.

At that time the attention of the Association in general session was directed by the writer to certain conditions and peculiarities of the relic which made it unreasonable to accept it as coming from the deep gravels of a river. The objections then made to the skull as evidence of man's great antiquity do not appear to have been reported or recorded, having been given in the course of the discussion and not in a paper of record.

One chief reason for the rejection of the skull as coming from the gravelly bed of an ancient river is the entire absence on its surface, or on its broken edges, of any marks of attrition. If the skull had ever been rolled along the bed of a river with the bowlders and gravel, it would bear the marks of the violent pounding and wearing action to which any bone or object occurring in such gravels is subjected. In fact, a hollow bone or least of all a human skull, could not remain intact, or even so well preserved a fragment as the skull in question, under such violent and abrasive conditions — conditions resulting in the rounding of the edges of pebbles and bowlders and in flattening out pellets of gold.

Those familiar with the auriferous gravel deposits, even of slight depth in modern rivers, know how the smaller materials fill every interstice of the bedrock, and, in the case of the bones of the mammoth and of the mastodon, how the foramens of the teeth and any cavity of the more solid bones of the jaw become filled up solidly with fine gravel, often cemented, and sometimes holding pellets of gold. Bones found in river gravels show the effects of attrition and wearing. All the thin plates, asperities, and sharp edges disappear under the violence to which they are subjected in running water transporting gravel.

In the Calaveras skull no such conditions are found. It was found hollow, nearly empty as left by the decomposed brain, not filled with gravel or sand, of a river deposit, and the broken edges were sharp and not abraded. This condition alone is sufficient evidence that the skull and the gravel in which it was said to occur were not parts of the same deposit and contemporaneous in origin in the river bed.

But certain objects were found in the skull — other bones, an ornament of some kind, and the shell of a snail, partially cemented together and to the skull by a deposit of calcareous tufa. All these objects indicate surface origin and interment, and their presence is not reconcilable with any theory of the entombment of the skull in auriferous, deep-seated gravel.

Since the exhibition of the skull at Chicago a full description of it, illustrated by a full-sized drawing, has been published by Professor Whitney.[1] By reference to this drawing it will be seen that all the fractured edges of the bones (for it is not an entire skull) are sharp and angular, and do not show signs of abrasion.

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[1] Contributions to American Geology, Vol. I. The Auriferous Gravels of the Sierra Nevada, California, by J. D. Whitney, 4to, Cambridge [U. S.], 1880.

The presence of calcareous tufa is adverse to the theory of the occurrence of the bone in the deep gravel. The tufa is an incrustation; its presence indicates surface evaporation and concentration of calcareous waters. It does not occur in this case as a permeating solution forming a cement for deep gravel, but as an investing crust deposited on and around the bone, although it is claimed that a chemical change in the bone has resulted. The cementing material of the deep gravels is generally siliceous rather than calcareous, or if calcareous it permeates the mass and unites the pebbles and grains of sand into a rock-like mass.

The description states: "In cutting away the mixed tufa and gravel which covered the face and base, several fragments of human bones were removed, namely, one whole and one broken metatarsal; the lower end of a left fibula and fragment of an ulna as well as a piece of a sternum." "These bones and fragments of bones might have belonged to the same individual to whom the skull had appertained, but besides these there was a portion of a human tibia of too small size to be referred to the same person." There were also fragments of the bones of a small mammal. Under the molar bone of the left side, a small snail shell was lodged, partially concealed by one of the small human bones which was wedged into the cavity. This shell was recognized by Dr. J. G. Cooper as *Helix mormonum*, a species now existing in the Sierra Nevada. Cemented to the fore part of the roof of the mouth was found a circular piece of shell four tenths of an inch in diameter, with a hole drilled through the center which had probably served as an ornament. Several very small pieces of charcoal were also found in the matter adhering to the base of the skull."[1]

I have given this full quotation that there may not be any mistake. Professor Whitney is certainly to be commended for his complete presentation of evidence which is sufficient, in my judgment, to show that he was dealing with the relics of an Indian burial place rather than a fossil from the ancient gravels. It is not possible to conceive that this mixture of human bones

[1] *Ibid.*, p. 268.

of portions of at least two individuals, an ornament, charcoal, and a snail of an existing species, or of any species — a thin fragile shell — could travel together in the bed of a river and be concentrated in one spot, in fact, in one mass. It is incredible.

Much stress in the discussion upon the authenticity of this relic is placed upon the statement of the miner that he found the skull in his mine; that he found it there lying on the side of the channel with a mass of driftwood. While this statement of finding bones and driftwood together at that depth tends to discredit the statement it may be accepted, but with the question, how did the skull get there? The best explanation is found in the statement of another miner who had a claim in the vicinity that in going home one evening he picked up the mass, and, in passing his neighbor's shaft, threw it down to frighten him, and get him to go home to supper. The skull was then "discovered" and taken to Angel's Camp, where, after resting for a time in the window of the apothecary, it attracted the attention of Dr. Jones, of Murphy's camp, and was made known to the scientific world.

This is the story as told to me by eyewitnesses and participants. Thus the silent but convincing testimony of the skull itself, and of human testimony, are against its reception as evidence of man's antiquity.

But while the authenticity of this skull as a Pliocene fossil is questioned and challenged by most authorities, it is often accorded a quasi-recognition rather than an unqualified rejection. For example Professor G. Frederick Wright relying partly upon new evidence presented by Mr. Becker at the meeting of the Geological Society of America in 1891 appears to be convinced of the genuineness of the skull and states "it would seem unreasonable any longer to refuse to credit the testimony."[1]

The most satisfactory and common-sense discussion of the merit of this skull as evidence with which I am acquainted is that by Principal Dawson in his work enitled *Fossil Men.*[2] After

[1] WRIGHT, Man and the Glacial Period, p. 296.

[2] Fossil Men and their Modern Representatives, by J. W. DAWSON, LL.D., F.R.S., F.G.S., Montreal, 1880, pp. 344-347.

giving five cogent reasons for the non-acceptance of the Calaveras skull as evidence of the existence of man in Pliocene times he sums up as follows: "The above reasons are, I think, quite sufficient to warrant any geologist in declining to accept the human remains of the California gravels as other than those of American Indians of modern periods."

Quatrefages makes two references to the Calaveras skull. In one he writes: "Much has been said about the skull discovered by Whitney in California. Unfortunately, the description of this specimen has not appeared so that doubts have on several occasions been expressed as to the existence of the fossil itself. The recent testimony of M. Pinart has removed them, but has at the same time created the most serious doubts as to the antiquity of this specimen, which seems to have been found in disturbed grounds."[1]

Again, in discussing the succession of the two great types of skulls, he states "that at present everything argues in favor of the anteriority of the dolichocephali. In America the only known fossil skull leads to the same conclusion."[2]

In the foregoing citation of the conclusions of Dr. Dawson it will be noted that he groups together the evidence presented by the skull and those from other human remains in the California gravels. This tendency is shown, also, by Dana, who, after mentioning the doubts of the authenticity of the skull, writes: "Whitney also mentions the discovery of flint implements in the auriferous gravel in other parts of California. The fossil plants of the gravels are referred to the Pliocene (or partly Miocene) by Lesquereux. The few mammalian remains include the Champlain mastodon and elephant, but in some places Pliocene species. Some recent land shells were contained in the earth filling the cranium."

To anyone not familiar with the localities, the modern and ancient gravels, and the occurrence of flint implements, the conclusion would, I think, be a fair one that both the mammalian remains and flint implements occur in the same gravels, or horizon, in which the skull is claimed to have been found. So far as my knowledge extends this is not so. I am not aware that it has been claimed that flint implements, or even the remains of the mammoth and the mastodon have been found where the skull was said to occur. That flint implements have been found in association with the remains of the large mammals there is little doubt, but as to the age of such gravels, and whether or not the implements may not have been washed in from higher levels or superficial deposits of a far later origin I am not able to bear conclusive testimony. The subject requires most careful and extended investigation, the fact being always kept in mind that in the gigantic placer mining operations of California there is a concentration upon the bedrock of all heavy objects which may have been originally in the surface soil or any part of the banks of gravel between the soil and the bed of the ancient river.

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[1] A. DE QUATREFAGES, The Human Species. Int. Sci. Series, D. Appleton & Co., 1888, p. 291.

[2] Ibid., p. 299.

In all river and creek channels of modern streams, and even in what are called dry arroyos or gulches, there is a possibility that in seasons of flood or of great accumulation of rushing water from showers or cloud-bursts objects lying on the surface, such as stone implements, pestles, mortars, metates, flint chips, etc., may be swept onwards in the gravel and sunk to the very bedrock and become buried by deposits twenty feet thick, and possibly more and all in the space of an hour or less. The loss of iron safes in different places in California and Arizona, the safes wholly disappearing, and similarly the loss of quicksilver in flasks while crossing a swollen torrent are familiar examples. Heavy objects, like gold, in swiftly moving water are carried to the lowest point possible and are covered from view by heavy deposits of gravel and bowlders. The finding, therefore, of Indian stone mortars at a considerable depth in gravel in a modern stream valley is not good evidence of antiquity.

In regard to the concentration of objects on the bedrock of placers, when there is sluicing or washing by the hydraulic method on a large scale, miners are familiar with the fact that nails, spikes, shot and bullets are frequently found in cleaning up the sluices. In one instance, known to the writer, a small cast-iron casket containing the remains of an infant in alcohol was found in cleaning up a sluice after a long run by the hydraulic process upon a bank of gravel some thirty feet deep.

THE TABLE MOUNTAIN RELICS

Much has been written regarding the flint implements in great variety and perfection of workmanship collected from Table Mountain near Angels Camp by the late Dr. Snell. It was stated by him that they were found under Table Mountain, the lava cap of an old Pliocene river. I must confess to have for a time lent credence to this view of their occurrence. I reported the facts as I then understood them at the Congress of Archæologists at Paris in 1867.

But later investigations have satisfied me that these relics were entombed in the surface soil and accumulations of the slope of the mountain just below the jutting, overhanging cliffs of the lava, which afforded excellent protection from the weather, and were no doubt occupied as habitations or dwellings analogous to the cliff-dwellings of New Mexico and Arizona, but without any, now visible, exterior wall or construction. There is no reason for associating these flint implements in any way with the occurrence of the skull, or with the bones of the great mammals.

Wm. P. Blake.

University of Arizona,
March 1899.